

## **Remarks**

Claims 1-13 were originally filed in this application and are subject to a Restriction Requirement. Claims 12-13 have been withdrawn from consideration as being drawn to a non-elected invention. Claims 1-11 remain in this application.

## **The Specification**

The Specification is amended to include the cross reference to related applications for the current application.

## **The 35 §USC 102 Rejections**

Claims 1-11 are rejected under 35 §USC 102(b) as being anticipated by Nakatsuka (Patent Publication No. JP11076769, The esp@cenet Abstract, the publication and a machine translation). This rejection is respectfully traversed and reconsideration is requested.

Claim 1 sets forth a step for introducing a chemical cleaning solution into the lumens. Further, a gas is applied at a pressure below the bubble point for progressively displacing at least some of the chemical cleaning solution within the lumens through the membrane pores which results in removal of the solids retained on or in the hollow membranes.

By contrast, it is submitted that the gas pressurization process in Nakatsuka is not used to displace a chemical solution as set forth in claim 1. In the Office Action, the Examiner has used the machine translation of the Nakatsuka document as a basis for the rejections. In particular, the Examiner indicates that the machine translation of Nakatsuka discloses that the chemical washing can be performed as "one step or [a] multistage" process and that "a gas pressurizing process may be suitably put among these washings[s] or into [any] order." Further, it is indicated in the Office Action that Nakatsuka discloses applying a gas pressure to displace the chemical cleaning solution in the lumens (a gas pressurizing process suitably put among the washings or in any order with the washings).

The USPTO has now provided a human translation of the Nakatsuka document dated April 6, 2009. The human translation is believed to be a more accurate translation

of the Nakatsuka Japanese document. Upon review of the human translation, it is respectfully submitted that claim 1 is not anticipated by the Nakatsuka document. Referring to paragraph 12 of the human translation, it is indicated that:

pressurizing with a gas may be provided at least at one at one point of time before or after the liquid chemical is supplied to the filtration module, or at both points of time

and that

In order to physically remove the substances adsorbed on the surface of the filter membrane and to further enhance the cleaning efficiency with the liquid chemical, **it is desirable when the aforementioned treatment is done prior to supplying the liquid chemical to the filter membrane module.**

The "aforementioned treatment" refers to the gas process. Therefore, the gas pressurization in Nakatsuka is not used to displace the chemical cleaning solution back through the membrane as set forth in claim 1. As such, it is believed that claim 1, and dependent claims 3 – 11 are not anticipated by Nakatsuka. Independent claim 2 includes similar subject matter to that of claim 1. Therefore, it is believed that claim 2 is also not anticipated.

Claims 1-5, 7 and 10-11 are rejected under 35 §USC 102(b) as being anticipated by Ford et al. (US Patent No. 4931186). This rejection is respectfully traversed and reconsideration is requested.

As set forth in Claim 1, a chemical cleaning solution is introduced into the lumens. Further, a gas is applied at a pressure below the bubble point for progressively displacing at least some of the chemical cleaning solution within the lumens through the membrane pores which results in removal of the solids retained on or in the hollow membranes.

This in contrast to Ford, which discloses that the fibers are backwashed by the clarified liquid in a **shock wash, driven by suddenly applied air at 500 kPa** (column

14, lines 15-18). Further, the backwash is of such intensity that the **fiber pores have been shown to stretch** slightly at 400 kPa and to stretch well at 500 kPa (column 14, lines 19-21). It is clear that the backwash by the clarified liquid in Ford does not provide a pressure which is below the bubble point for progressively displacing the chemical cleaning solution as set forth in claim 1. This is further supported by the fact that the fiber pores in Ford have been shown to stretch. Therefore, it is believed that claims 1-5 and 10 – 11 are not anticipated by Ford. Independent claim 2 includes similar subject matter to that of claim 1. As such, it is believed that claim 2 is also not anticipated.

### **The 35 §USC 103 Rejection**

Claims 6 and 8-9 are rejected under 35 USC 103(a) as being unpatentable over Ford et al. and Nakatsuka. This rejection is respectfully traversed and reconsideration is requested.

As previously described, claim 1 includes a step for introducing a chemical cleaning solution into the lumens. A gas is then applied at a pressure below the bubble point for progressively displacing at least some of the chemical cleaning solution within the lumens through the membrane pores which results in removal of the solids retained on or in the hollow membranes.

It is indicated in the Office Action that Nakatsuka teaches that the cleaning solution in conjunction with a gas backwash is capable of sufficiently removing an adsorbed material to the filter membrane. However, the gas in Nakatsuka is not used to force the chemical cleaning solution through the membrane to achieve optimum cleaning with minimum chemical consumption. In particular, Nakatsuka merely discloses that pressurizing with a gas may be provided at least at one at one point of time before or after the liquid chemical is supplied to the filtration module, or at both points of time. Further, Nakatsuka discloses that in order to physically remove the substances adsorbed on the surface of the filter membrane and to further enhance the cleaning efficiency with the liquid chemical, it is desirable when the aforementioned treatment is done prior to supplying the liquid chemical to the filter membrane module.

In addition, Ford discloses the use of a shock wash which stretches the pores. As such, Ford does not even contemplate the use of a pressure which is below the bubble point for progressively displacing the chemical cleaning solution.

Neither Nakatsuka nor Ford et al., alone or in combination, suggest Applicant's inventive process where alternating filtration and reverse flow using gas pressure are used to draw a chemical cleaning solution back and forth through the membrane in repeated cycles. Absent such suggestion, there would be no reason why one of ordinary skill in the art, who was faced with the same problems confronting the Applicant and who had no prior knowledge of Applicant's claimed structure, would consult either Nakatsuka or Ford et al. alone or in combination to overcome the problems set forth in the patent application. Claims 6 and 8-9 depend from claim 1. As such, it is believed that claims 6 and 8-9 are not obvious.

Should the Examiner be of the view that an interview would expedite consideration of this Amendment or of the application at large, request is made that the Examiner telephone the applicant's attorney at (732) 321-3193 in order that any outstanding issues be resolved. The undersigned authorizes the charging of any fee deficiency that is due to Deposit Account No. 19-2179.

Respectfully submitted,



Pasquale Musacchio  
Reg. No. 36,876

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Customer Number 028524  
**SIEMENS CORPORATION**  
Intellectual Property Department  
170 Wood Avenue South  
Iselin, NJ 08830  
(732) 321-3193